CLAIMS

1. A monocular device for a night vision device, the monocular device comprising:

a monocular housing made from a conductive material and having at least one mounting feature extending along an outer surface of the monocular housing,

wherein an optical axis of the monocular housing is aligned in parallel with a mechanical axis of the at least one mounting feature;

an eyepiece optical element having an eyepiece focus ring slidably connected to the monocular housing by at least one focus mechanism;

an objective optical element having an objective focus ring slidably connected to the monocular housing by at least one focus mechanism;

a tube module having a tube power supply and insulative material shielding the tube module from the rest of the monocular; and

at least two integral purge mechanisms extending through the monocular housing, wherein each integral purge mechanism is located at opposite ends of the tube module,

wherein an optical axis of the tube module is aligned in parallel with the mechanical axis of the at least one mounting feature.

2. The monocular device of claim 1, further comprising an electromagnetic interference (EMI) filter conductively connected to the monocular housing.

3. The monocular device of claim 1, wherein the eyepiece focus ring has a conductive outer coating conductively connected to the at least one focus mechanism and the monocular housing.

4. The monocular device of claim 1, wherein the eyepiece focus ring has a first circular spring located at a first end of the eyepiece focus ring, and a second circular spring located at a second end of the eyepiece focus ring, wherein the first and second circular springs center the eyepiece focus ring within the monocular housing.

5. The monocular device of claim 1, wherein the eyepiece optical element further comprises an eyepiece focus adjustment ring having a tapering profile concealing the eyepiece focus adjustment ring from a user's line of sight.

6. The monocular device of claim 1, wherein the objective focus ring has a conductive outer coating conductively connected to the at least one focus mechanism and the monocular housing.

7. The monocular device of claim 1, wherein the objective focus ring has a first circular spring located at a first end of the objective focus ring, and a second circular spring located at a second end of the objective focus ring, wherein the first and second circular springs center the objective focus ring within the monocular housing.

8. The monocular device of claim 1, wherein the insulative material is a sheet of insulating material between the monocular housing and the tube module.

9. The monocular device of claim 1, wherein the insulative material is a coating of insulating material between the monocular housing and the tube module.

10. The monocular device of claim 1, further comprising a signal reducing means for adjusting tube electro-optical performance via reduction of incoming light signal, the signal reducing means selected from the group consisting of: a glass disk

disposed in front of a glass input window of the tube module, a filter deposited on a glass disk that absorbs incoming light energy in the spectral band of intensified night vision, and a disk glued in such a manner that it is not removable from the tube module.

11. The monocular device of claim 1, further comprising at least one tube alignment screw holding the tube module in place in the monocular housing.

12. The monocular device of claim 1, further comprising an attached objective shroud located on an outer end of the objective optical element.

13. The monocular device of claim 1, wherein the monocular device may be rotated about the mechanical axis of the at least one mounting feature.

14. A night vision device, comprising:

two monocular devices, wherein each monocular device comprises:

a monocular housing made from a conductive material and having at least one mounting feature extending along an outer surface of the monocular housing,

wherein an optical axis of the monocular housing is aligned in parallel with a mechanical axis of the at least one mounting feature,

an eyepiece optical element having an eyepiece focus ring slidably connected to the monocular housing by at least one focus mechanism,

an objective optical element having an objective focus ring slidably connected to the monocular housing by at least one focus mechanism,

a tube module having a tube power supply and insulative material shielding the tube module from the rest of the monocular,

at least two integral purge mechanisms extending through the monocular housing, wherein each integral purge mechanism is located at opposite ends of the tube module,

wherein an optical axis of the tube module is aligned in parallel with the mechanical axis of the at least one mounting feature; and

a monocular mounting system interconnecting the two monoculars using a cross beam,

the cross beam being a mount bridge having a first monocular bridge at a first end and a second monocular bridge at a second end,

wherein each monocular is attached to either the first monocular bridge or second monocular bridge such that the two monoculars extend at a first fixed angle to each other and at a second fixed angle to an observer's eyes such that both monoculars are optically aligned to a fixed point in space in front of the device.

15. The night vision device of claim 14, wherein the collimation of the night vision device is fixed via an optical alignment of each monocular housing to each eyepiece focus ring, each tube module, and each objective focus ring, and via the two monocular devices alignment through the cross beam.

16. The night vision device of claim 14, further comprising a mount slide rotatably connected to a helmet by a mount attachment.

17. The night vision device of claim 16, further comprising a dovetail plate slidably located within a slide cavity within the mount slide.

18. The night vision device of claim 17, wherein the dovetail plate comprises a sliding electrical interface including a set of electrical traces and/or contacts interacting with complementary electrical traces and/or contacts mounted in the mount slide.

19. The night vision device of claim 18, further comprising a cam pin located within the mount slide, the cam pin connected to a lever protruding from the mount slide, wherein when the lever is rotated to a first position, the cam pin is not in contact with the dovetail plate, and wherein when the lever is rotated to a second position, the cam pin rotates into contact with the dovetail plate and a frictional interface between the cam pin and the dovetail plate prevents fore-and-aft movement of the dovetail plate.

20. The night vision device of claim 17, further comprising at least one bridge clamp connecting the mount bridge to the dovetail plate.

21. The night vision device of claim 17, further comprising a complete electrical shield surrounding all electrical components of the night vision device, the electrical shield comprising the eyepiece optical elements conductively connected to the monocular housings, the monocular housings conductively connected to the mounting mechanisms, the mounting mechanisms conductively connected to the cross beam, the cross beam conductively connected to the dovetail plate, the dovetail plate conductively connected to the mount slide.

22. The night vision device of claim 14, wherein the cross beam is conductively connected to each monocular housing.

23. The night vision device of claim 14, wherein the cross beam has a hollow configuration providing EMI shielding to any components extending therethrough.

24. The night vision device of claim 14, further comprising two monocular bridge pins extending between and interconnecting the monocular bridge and the two monoculars.

25. The night vision device of claim 24, further comprising two fore pin end bushings and two aft pin end bushings, wherein each fore pin end bushing has a frictional fit between one monocular housing and a first end of one monocular bridge pin, and each aft pin end bushing has a frictional fit between one monocular housing and a second end of one monocular bridge pin to fix collimation of the two monoculars.

26. The night vision device of claim 24, further comprising at least one fore pin end bushing and at least one aft pin end bushing interposed between one monocular housing and one monocular bridge pin, wherein at least one fore pin end bushing or aft pin end bushing is a rotatable cam which is rotatable to adjust collimation of the two monoculars and fixed in place to fix collimation of the two monoculars.

27. A method of making a night vision device, wherein the night vision device is made by retrofitting existing parts, comprising the steps of:

removing at least one eyepiece optical element, stripping mechanical housings from the at least one eyepiece optical element, and rebuilding the at least one eyepiece optical element with the focus mechanisms described in claim 14;

removing at least one objective optical element, stripping mechanical housings from the at least one objective optical element, and rebuilding the at least

one objective optical element with the focus mechanisms described in claim 14;

removing at least one tube, stripping the at least one tube to a tube module and a power supply and repotting the tube module in at least one monocular housing described in claim 14;

repotting the at least one eyepiece optical element and at least one objective optical element to the at least one monocular housing; and

removing an existing monocular mounting system and mounting the at least one monocular housing to the monocular mounting system described in claim 14.

28. The method of claim 27, further comprising the step of purging the tube module with vacuum if the existing purge is broken.

29. The method of claim 27, wherein the step of removing at least one tube, stripping the at least one tube to a tube module and a tube power supply and repotting the tube module further comprises removing a tube package and tube potting to reduce weight and size, and relocating the tube power supply to the base of the monocular mounting system to reduce its contribution to the moment of inertia relative to the head of the user.